

Exhibit 7

**IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF GEORGIA
VALDOSTA DIVISION**

MICHAELA UNDERWOOD, et al,

Plaintiffs,

V.

AXON ENTERPRISE, INC., et al,

Defendants.

Case No.: 7:21-cv-00040-WLS

REPORT OF BRYAN CHILES

I, Bryan Chiles, being of legal age and under the penalties of perjury, state as follows:

1. I am a competent adult and have personal knowledge of the following facts or believe them to be true based on information and belief. Facts about which I do not have personal knowledge are of the type reasonably relied upon by experts in this field and have probative value to me in rendering my opinions.
2. Attached is a true and accurate copy of my expert report in the above captioned litigation.
3. The report summarizes my analysis and findings and includes a statement of my opinions. The report also includes data and other information considered by me in forming my opinions and sets out my qualifications (including my Curriculum Vitae).
4. My opinions are expressed to a reasonable, or higher, degree of professional certainty and/or probability.
5. I affirm under the penalties of perjury that the foregoing statements are true and correct.



Bryan Chiles

24-March-2022

Date _____

FRCP 26(a)(2)(B)(iv) Witness's Qualifications Include¹

I am a test engineering professional with an Associates of Science (AS) degree in Electronics. I have invested over 20 years of my career in the testing and troubleshooting of electronic devices in a variety of industries, including test equipment calibration and repair, industrial power electronics, high power electrical distribution and conditioning, energy weapons, cameras, radio frequency (RF) devices, and network information technology equipment (ITE).

After spending 8 years in the calibration & repair and high-power electrical distribution and conditioning industries, I began my career at Axon Enterprise, Inc. (Axon), (then TASER International, Inc. (TASER)), in the summer of 2005 in the Research and Development (R&D) department as an electronics technician. Within 1 year, I began to develop TASER's validation department, designing test methods and managing the validation testing processes. This was a very unique position, as there were no generally accepted standards for validating energy weapons at the time. Using my testing expertise and working closely with the design engineers, I developed and executed the test plans and methods for TASER® energy weapons and Axon cameras. In the process of testing energy weapons and cameras, I became intimately familiar with their operation, behavior, and capabilities.

Beginning in 2013, I assumed increased responsibilities and began conducting investigation analysis of energy weapons and cameras involved in field use. Using my expertise in the energy weapon and camera's behavior and logging, I began to analyze specific incidents and generate analysis and expert reports, explaining energy weapon functionality and logging in reference to cases submitted to me.

I was promoted to TASER's Technical Compliance Manager in 2014, where I continued working in and managing the validation department and conducting investigation analysis, and also assumed responsibilities for product compliance to domestic and international technical standards and regulations (i.e., wireless and electromagnetic compatibility (EMC) regulatory compliance, product safety, etc.). In 2016, my position was re-named Product Compliance Manager (which was the same position as Technical Compliance Manager, but with a clarified title), however I relinquished my validation responsibilities to concentrate and focus solely on investigation analysis and product compliance.

In January 2020, I was promoted to Senior Investigations Engineer, where my sole focus is conducting investigation analysis, expert services, and testimony, energy weapon/camera forensic testing, and advanced level customer service. I have presented on energy weapon forensics at the AFTE (Association of Firearm and Tool Mark Examiners) Annual Training Conference (May 2017 in Denver CO) as well as presenting on trial testimony at the Axon

¹ See current Curriculum Vitae for further details and specifics. My curriculum vitae containing details of my relevant formal education, training, experience, publications authored, and a listing of any cases in which testimony (deposition and/or trial) as an expert has been taken is attached hereto and made an integral part hereof.

Accelerate certification conferences (June 2017 and 2018) and the TASER Master Instructor Schools in 2018 (Sanford, FL, Toronto ON, and Mesa AZ), as well as teaching the interpretation of X2 and X26P energy weapon Pulse Graphs at the TASER Master Instructor School (Sanford, FL 2018). I delivered four presentations at the Axon Accelerate 2018 conference June 5–7, 2018, including A Deep Dive into energy weapon Pulse Graphs, Drop ‘em, Soak ‘em - How we test our energy weapons, Understanding your energy weapon Data, and Testifying on Axon Video Evidence. I have also taught certification classes on analyzing Pulse Graphs at Axon’s Master Instructor School beginning in 2021.

I have personally deployed and discharged energy weapons, including the TASER M26, X26E, C2 (a.k.a.- Bolt), Shockwave, X3, XREP, X2, X26P, Pulse, TASER 7, and experimental (in development) energy weapons, hundreds to thousands of times, including deploying energy weapon cartridges thousands of times. I have downloaded TASER energy weapons and reviewed, analyzed, interpreted, and explained the data thousands of times. I have personally operated, downloaded/uploaded, tested, and analyzed Axon BWCs and their recorded videos thousands of times. I have also provided expert testimony on Axon BWCs or TASER energy weapon technology in US federal, state, and foreign courts, as outlined in my attached CV. I am a current member of the USNC (United States National Committee) experts, participating in a workgroup (TS85 WG22) reviewing and revising IEC 62792, an international standard on energy weapon output measurement.

FRCP 26(a)(2)(B)(ii) case specific facts or data considered:

- *DEFT 0058-0067 Anthony Tripp BB84028 Taser Download.pdf*- PDF file containing the Event Log from Deputy Tripp’s X26P energy weapon X1300834F.
- *Plaintiff’s Exhibit 6 (C. Spurgeon).pdf* - PDF file containing the Event Log from Deputy Spurgeon’s X26P energy weapon X130082XN.
- *X1300834F Pulse Report 1 (MCBRAYER).pdf*- PDF file containing the X26P energy weapon X1300834F Pulse Graph from activation sequence 250.
- *X1300834F Pulse Report 2 (MCBRAYER).pdf*- PDF file containing the X26P energy weapon X1300834F Pulse Graph from activation sequence 251.
- *X1300834F Pulse Report 3 (MCBRAYER).pdf*- PDF file containing the X26P energy weapon X1300834F Pulse Graph from activation sequence 252.
- *X1300834F Pulse Report 4 (MCBRAYER).pdf*- PDF file containing the X26P energy weapon X1300834F Pulse Graph from activation sequence 253.
- *X130082XN Pulse Report 1 (MCBRAYER).pdf*- PDF file containing the X26P energy weapon X130082XN Pulse Graphs from the activation sequence 358.
- *X130082XN Pulse Report 2 (MCBRAYER).pdf*- PDF file containing the X26P energy weapon X130082XN Pulse Graphs from the activation sequence 359.
- *Deputy Tripp Police Report - Defendant’s Exhibit 1.pdf*
- *Defendant’s Exhibit 14 (Spurgeon).pdf* – Deputy Spurgeon’s report
- *Tripp Bodycam.mp4* – Incident video as recorded by Deputy Tripp’s BWC
- *Spurgeon Bodycam.mp4* - Incident video as recorded by Deputy Spurgeon’s BWC

- *Defendant_s Exhibit 20 (Gaffney-Kraft).pdf* – Autopsy photos of X26P probe wounds
- *Seq-250-deployment_screenshot.png* – Screenshot of Sequence 250 from Tripp's BWC footage
- *Seq-251-screenshot.png* – Screenshot of Sequence 251 from Tripp's BWC footage
- *Seq-252-screenshot.png* – Screenshot of Sequence 252 from Tripp's BWC footage
- *Seq-253-screenshot.png* – Screenshot of Sequence 253 from Tripp's BWC footage
- *Seq-357_armed-screenshot.png* – Screenshot of Sequence 357 from Spurgeon's BWC footage
- *Seq-357_zoomed.png* – Zoomed image of the X26P in the screenshot of Sequence 357 from Spurgeon's BWC footage

FRCP 26(a)(2)(B)(ii) non-case specific facts or data considered (including referenced documents/materials), also, these documents are the FRCP 26(a)(2)(B)(iii) exhibits:

- X26P Specification Sheet, version 5.0 (Nov 2017)
- X26P User Manual, Rev H (Feb 2019)

Brief Background of Events

On April 24, 2019, at approximately 05:00 Eastern Daylight Time (EDT), Deputies Tripp and Spurgeon responded to a 9-1-1 call regarding a person that was yelling for help after a vehicle accident. Mr. McBrayer was located beside a nearby building and shortly after, ran toward Deputy Tripp. Deputy Tripp deployed a cartridge from his X26P energy weapon. The deployment of the TASER X26P did not appear to affect Mr. McBrayer and he continued to run toward Deputy Tripp and appeared to strike him. Deputy Tripp re-activated his X26P energy weapon 3 more times. Deputy Spurgeon arrived after Deputy Tripp had deployed his TASER X26P energy weapon. Deputy Spurgeon removed the cartridge from his X26P energy weapon and activated it twice in attempts to drive-stun Mr. McBrayer. The attempted drive-stuns did not appear to affect Mr. McBrayer. After a prolonged struggle, the deputies were able to detail Mr. McBrayer with the assistance of back-up deputies. Tragically, Mr. McBrayer later became unresponsive, and medical personnel were unable to revive him.

Brief Summary of Opinions

The X26P energy weapon X1300834F (Deputy Tripp's X26P):

- The X26P energy weapon X1300834F experienced clock drift of 3 minutes and 6 seconds fast (ahead) on April 24, 2019. The most accurate time of the events can be calculated by subtracting 00:03:06 from the event times recorded on April 24, 2019.
- The X26P energy weapon X1300834F was trigger activated 4 times on April 24, 2019, between 05:01 and 05:02 EDT (clock drift compensated) for a total of 20 seconds.
- The pulse graphs indicate the X26P energy weapon X1300834F discharged into the following load connection types during the incident:
 - Arcing in open air: 15 seconds
 - Medium-low impedance consistent with flesh: 3 seconds
 - Very high impedance consistent with skin and fat: 2 seconds
- Although there was a brief electrical connection to Mr. McBrayer in the first activation (Sequence 250), NMI is not expected to have been achieved due to the lack of probe spread and lack of sufficient muscle between the probes.
- Activation Sequences 251, 252, and 253 had no potential to create NMI on Mr. McBrayer.

The X26P energy weapon X130082XN (Deputy Spurgeon's X26P):

- The X26P energy weapon X130082XN experienced clock drift of 3 minutes and 54 seconds fast (ahead) on April 24, 2019. The most accurate time of the events can be calculated by subtracting 00:03:54 from the event times recorded on April 24, 2019.
- The X26P energy weapon X130082XN was trigger activated 2 times on April 24, 2019, at 05:02 EDT (clock drift compensated times) for a total of 10 seconds.
- The pulse graphs indicate the X26P energy weapon X130082XN discharged into the following load connection types during the incident:
 - Arcing in open air: 4.8 seconds
 - Very high impedance consistent with skin and high fat: 5.2 seconds
- Activation Sequences 358 and 359 were activated with no cartridge installed and applied in drive-stun mode. Therefore, there was no potential to create NMI.

Activation Sequences 358 and 359 only had the potential for pain compliance for 5.2 of the 10 seconds it was activated, depending on whether Mr. McBrayer was receptive to pain.

CFRCP 26(a)(2)(B)(vi) Compensation for Study/Testimony in the Case:

As an employee of Axon, I am writing this expert report as a part of my normal forensic and expert analysis duties; and am not receiving additional compensation.

REPORT AND PROFESSIONAL OPINIONS OF BRYAN CHILES

Axon Enterprise, Inc. (Axon)

Request and Scope of Work:

I was asked to conduct a data analysis of the Event Logs and Pulse Graphs for the X26P energy weapons with serial numbers X1300834F and X130082XN, both manufactured by Axon Enterprise, Inc. on September 30, 2018, in reference to a reported incident on April 24, 2019, at approximately 05:00 EDT. The weapons' Event Logs, contained in the enclosed files *DEFT 0058-0067 Anthony Tripp BB84028 Taser Download.pdf* and *Plaintiff's Exhibit 6 (C. Spurgeon).pdf*, along with their associated pulse graphs; X130082XN Pulse Reports 1 and 2, and X1300834F Pulse Report 1 to 4, and video files from Deputy Spurgeon's and Deputy Tripp's body worn cameras (BWCs), were analyzed to form my opinions.

1. X26P Energy Weapon Generally:

The TASER X26P energy weapon (first available in January 2013), pictured below in Figure 1.1, is a single-cartridge energy weapon in the Axon Smart Weapons line, available in black or yellow.

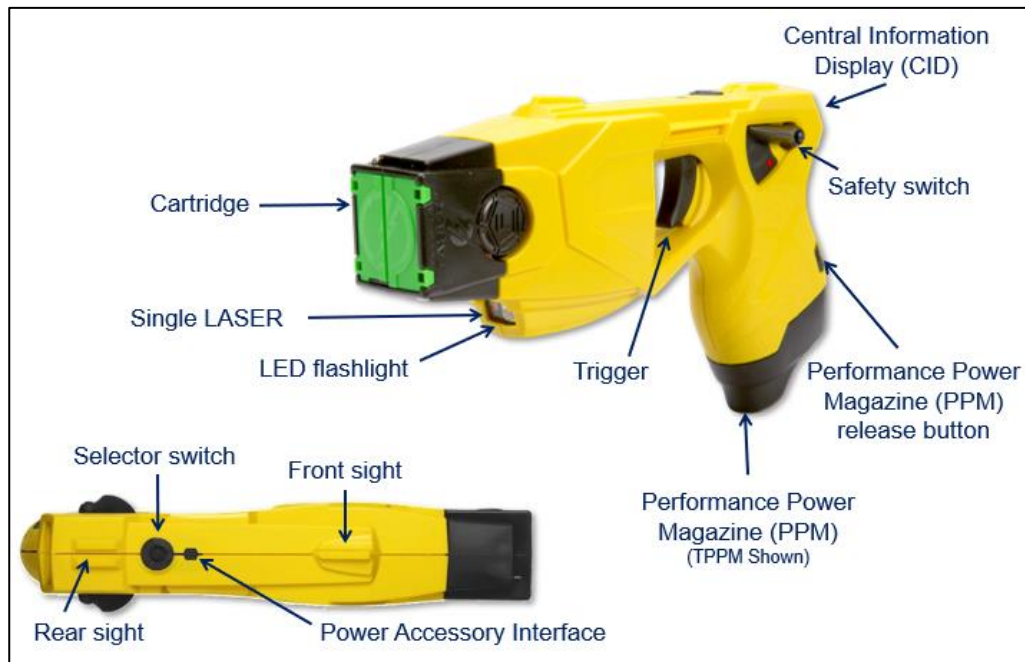


Figure 1.1 – The X26P Energy Weapon Anatomy

Standard Cartridges: Like the popular X26E, the X26P energy weapon uses standard TASER energy weapon cartridges, which are deployed by the electrical arc of the energy weapon when the trigger is pulled.

A cartridge can only be deployed one time and cannot be reloaded. However, a successfully

deployed cartridge with probes remaining in a conductive target can be reenergized by pulling the trigger again.

Safety Switch: The X26P features an ambidextrous safety switch. When the safety switch is placed in the up (ARMED) position, the weapon is ready to activate. The X26P will arm anytime the safety switch is placed in the ARMED position, except when in Universal Serial Bus (USB) mode. The X26P enters power-down mode when the safety switch is placed in the down (SAFE) position.

Trigger: When the X26P is armed and the trigger is pulled, it will activate the high voltage pulses, deploying a live cartridge in the cartridge bay, remaining active for 5 seconds at 19 ± 1 pulses per second (pps). If the trigger is pulled and then released, after 5 seconds the high voltage activation will stop. With a standard PPM battery pack, if the trigger is held beyond 5 seconds, the high voltage will remain active as long as the trigger is held or until the battery is depleted, whichever occurs first. If the safety is placed in the down (SAFE) position during any active cycle, the energy weapon will immediately end the discharge and turn off. Axon also offers battery packs that limit each activation to 5 seconds, regardless of the trigger being held (e.g., Auto Shut-Down Performance Power Magazine (APPM) or eXtended Auto Shut-Down Performance Power Magazine (XAPPM)). The APPM gives an audible beeping warning tone at the 4th second of the activation until the activation stops or the trigger is released. With the APPM, another 5-second activation can only be initiated by pulling the trigger again.

Path Sense and “Skip Pulse”: Beginning in firmware version 04.032, when the X26P is trigger activated it will pulse at 19 pulses per second (PPS). If the CEW senses at any time that it cannot discharge due to a lack of electrical path (i.e.- a missed probe on a deployment), it will automatically reduce the pulse rate to 8 PPS to reduce stress on the high voltage components. If it senses a change in the path at any time and that it can discharge again, it will automatically increase the pulse rate again to 19 PPS.

Menu and Selector Button: The X26P menu is used to read or change the LASER (Light Amplification by Stimulated Emission of Radiation) and flashlight illumination settings. The illumination menu can be selected by pressing the Selector Button on the top of the weapon while in safe mode. Note that the X26P can be armed with the safety switch and activated at any time, even when the weapon is in the illumination settings. When the X26P is armed, the Selector Button will put the weapon in “stealth” mode, which will dim the Central Information Display (CID) and turn off the LASER and flashlight.

Trilogy Logs: The X26P records information into the Trilogy Logs, which consist of the Event Log, the Pulse Logs, and the Engineering Logs. It is not possible for a user to delete or alter the Trilogy Logs. The Trilogy Logs can only be downloaded by the proprietary USB pack and software described above.

Event Log: The Event Log is a recording of the date, time, and details of each event

that occurs with the X26P energy weapon, including the timestamp² for every time the weapon is armed, the trigger is pulled,³ the illumination menu is accessed, the time is changed, the safety switch is placed in the safe position, USB mode is entered, the firmware is updated, and more. Relevant events also include the internal temperature of the weapon, the duration of the event (rounded up to the nearest second), and the battery percentage remaining at the time of the event. The Event Log will record approximately 16,000 entries before it will “wrap” and begin to overwrite the oldest entries.

Pulse Logs: The Pulse Logs are a recording of every pulse that is generated by the X26P. There are 3 measurements recorded for each pulse: (1) the voltage across the stimulation capacitor; (2) the voltage across the arc capacitor; and (3) the charge delivered from the X26P output. The Pulse Log is an allocated part of memory and records each pulse from each activation, regardless of the duration of the activation. Therefore, the number of activations stored in the Pulse Log is variable and dependent on the duration of the activations. Based on 5-second activations only, the Pulse Log will store 422 activations before the memory fills up. Once the memory is full it will delete the oldest sector of memory to free up space, which will delete the oldest 40 (5-second) activations. However, based on specific usage, the number of activations stored in the Pulse Log could be more or less.

Engineering Logs: The Engineering Logs are a recording of all activity in the X26P. The Engineering Log records, along with a timestamp, every button push, microprocessor command, circuit status, reported errors, faults and more. The Engineering Logs are only accessible by Axon Engineering and are used for troubleshooting purposes or acquiring deeper information about a specific activation or incident.

Clock Drift: All clocks, other than reference atomic clocks, whether digital or analog, are subject to some inherent clock drift. “Clock drift” is defined simply as the phenomenon where a clock runs at a different rate than a reference clock. In relation to an atomic clock, for instance on which the United States bases the “official” time (www.time.gov), all non-atomic clocks will experience some amount of drift. The amount of drift experienced is dependent on factors including component tolerances, temperature, subtle environmental changes, and power source. For these reasons, two clocks of the same design may have different rates of drift. Without “synchronizing” clocks periodically (setting them to the same time reference with known tolerances), clocks lose accuracy over time. This is why you may notice that 2 clocks that had been set to the same time can show a different time at a later date. The clock

² The internal Real Time Clock of the X26P Energy Weapon is set in reference to Universal Time Constant (UTC). Any conversions to local time are calculated by Evidence Sync software and Axon Evidence based on the user’s location settings.

³ Note, the X26P energy weapon’s trigger pull timestamp is when the trigger is pulled, not at the end of the cycle as the popular X26E energy weapon records.

drift of both clocks caused the times to “drift” from the original synchronization.

Because of this natural clock drift, the internal clock of the X26P energy weapon can drift approximately up to ± 2 minutes per month. The amount of drift observed in the Trilogy Logs will vary depending on the physical tolerances of the energy weapon’s components, remaining battery capacity, environmental conditions, and how long the energy weapon’s real time clock (RTC) has been running since its last synchronization. The amount of potential clock drift on a specific date can be calculated by using the clock synchronization records in the Activation Log and determining how far the clock drifted in the latest synchronization and how much time had passed since the last synchronization before the date of the incident.

USB: The X26P is downloaded by connecting the energy weapon to a proprietary USB pack that inserts into the energy weapon’s battery pack compartment. Once connected to USB, the X26P will enter USB mode and the energy weapon’s Trilogy Logs can be downloaded to a local Personal Computer (PC) or network or uploaded to Axon Evidence (Evidence.com) using Evidence Sync software. USB mode also allows the synchronization of the X26P clock, firmware updates, and configuration setting.

Pulse Graphs: The Pulse Graphs available on Evidence.com are created from the Pulse Logs in the energy weapon, which contain electrical information about every pulse that the energy weapon discharges. Durations in the Event Log are rounded up to the second, while the durations in the Pulse Graphs are accurate to $1/10^{\text{th}}$ (or 0.1) of a second.

The X26P records information in the Pulse Logs, which includes the (1) arc voltage, (2) stimulation (stim) voltage, and (3) output charge.

- The arc voltage is the voltage across the arc capacitors in the X26P energy weapon’s high voltage module. This voltage gives indication of what level the capacitors needed to be in order to produce an electrical arc.
- The stim voltage is the voltage across the stimulation capacitor in the X26P energy weapon’s high voltage module. The stim voltage indicates the voltage that the stimulation capacitor charged up to when an electrical pulse was generated.
- The output charge is the value of the charge (electrical current over time) measured in microcoulombs (μC). One (1) Coulomb is equal to one (1) ampere over one (1) second, so one (1) microcoulomb is equal to 0.000001 amperes per second.

The Arc and Stim voltages give an indication of the load impedance (high or low) and whether the load was stable or not.

High Impedance Load: The load impedance can be high when the cartridge probes partially connect and arc through skin and fat, drive-stun applications, or with probes contacting a subject with high adipose fat tissue content.

Low to Medium-High Impedance Load: The load impedance can be when arcing across the front of the cartridge or cartridge bay, arcing in water, shorted across metal, or with probes contacting a subject with low resistance tissue. Probes penetrating the skin and discharging into the underlying tissue can range from low to medium-high impedance due to differences in individual body chemistry⁴.

The output charge indicates whether the capacitors discharged. Based on the extreme variation of loads that the X26P output can arc across, the pulse graphs alone cannot determine the exact situation of an energy weapon discharge, but rather can be combined with other incident-specific information/reports to imply the type of load, if any, the X26P energy weapon discharged into. The only definite indications the output charge can provide is when no charge is delivered (0 microcoulombs) or if the charge is within specification when the charge is delivered.

The X26P energy weapon uses Charge Metering to attempt to regulate the output charge to a target level. When the X26P energy weapon is trigger activated, it charges the arc and stimulation capacitors to a nominal voltage. When the capacitors are signaled to discharge, the output charge is measured. If the charge is lower than the target value (high impedance load), the charge voltage of the arc and stim capacitors is increased. If the charge is higher than the target value, the charge voltage of the arc and stim capacitors is lowered. The charge is measured again on the next pulse and the voltage is again adjusted accordingly. This algorithm is constantly metering and adjusting the output to keep the charge regulated. If the load impedance is very high, resulting in a low charge, the arc and stim voltages are increased up to a threshold value where it reaches the maximum voltage allowed for the capacitors. The X26P energy weapon will continue at this maximum value until the charge value is increased to the target value. Once the capacitors are at their maximum permitted voltage, it is impossible to increase the charge unless the load impedance drops. If the load impedance drops and the charge increases above the target value, the X26P energy weapon will lower the charge voltage on the arc and stim capacitors until the charge drops to the target value.

Because the effectiveness of an energy weapon is dependent on a variety of factors, including, among others, having a closed circuit, probe spread, and location of the probes, the Pulse Logs alone do not indicate whether an activation was effective or not. The Pulse Logs alone can only determine if there was potential for effectiveness, given the conditions for effectiveness are met.

Although the Pulse Logs give confirmational indication of the type of load the energy weapon discharged into (or did not discharge), the logs alone cannot indicate with certainty if a trigger activation was initiated with a cartridge or not, nor can it indicate with certainty whether a discharge was through probes of the cartridge or directly to the load in a drive-

⁴ Dawes D, Ho J, Miner, J, Kroll, MW Electrical Characteristics of an Electronic Control Device Under a Physiologic Load. *PACE*. Dec 2009

(contact or touch) stun method.

Effectiveness: If a fresh, unexpended, cartridge is installed in the X26P energy weapon and the trigger is activated (when armed), the X26P energy weapon will deploy the cartridge, launching the probes tethered to wires and activate the high voltage pulses on the electrodes. If both probes contact a conductive target forming a completed (intact) circuit, the electrical charge from the weapon will be delivered through the wires and probes into the target.

In human subjects, the delivered electrical charge can cause NMI when certain conditions are met. These required conditions include, but are not limited to:

- There is a completed and maintained circuit between the electrodes (or probes) to allow electrical current to flow;
- There is sufficient spread, or distance, between the electrodes; and
- There is sufficient motor-nerve mediated muscle mass between the electrodes.

The amount of NMI achieved is generally proportionate to the spread between the probes and varies dependent upon numerous factors, including both probes electrically contacting the subject, the motor-nerves captured in the electric field relative to the probes, amount of muscle between the probes, the amount of skin and fat tissue that the electrical charge has to travel through, and other factors. A wide probe spread to the back of a subject, capturing large muscle groups can result in full body muscle “lockup” of a subject.⁵ However, if both probes contact the subject, but there is not enough muscle between the probes, the energy weapon will only cause potential pain and potentially localized NMI of only the muscle between or close to the probes without full body lockup.

If only one (1) probe makes contact with the subject and the other probe is sufficiently close enough to the subject’s skin (within ≈ 1.6 centimeters (cm) to arc to (jump through the air)),⁶ with enough spread between the probes, NMI can be achieved by the probe near the skin arcing through the air to the skin. The amount of motor-nerve mediated NMI achieved is again dependent on the amount muscle between the probes, the amount of air, skin, and fat tissue that the electrical charge has to travel through, and other factors.

If only one (1) probe makes contact with the subject, but the other probe is not close enough to the subject’s skin to arc to, no NMI will be achieved.

When the X26P energy weapon is trigger activated and all required conditions are

⁵ “Incapacitation by all measures was found to be a function of spread; generally increasing in effectiveness up to spreads between 9 and 12 in. There were notable differences between front and back exposures, with front exposures not leading to full incapacitation of the upper extremities regardless of probe spread.” Ho J, Dawes D, Miner, J, Kunz S, Nelson R, Sweeney J. Conducted electrical weapon incapacitation during a goal-directed task as a function of probe spread. *Forensic Sci Med Pathol*. Apr 2012.

⁶ Chiles, B.D., Nerheim, M.H., Brave, M.A., Panescu, D., Kroll, M.W. Electrical Weapon Charge Delivery with Arcing. *Conf Proc IEEE Eng Med Biol Soc*, vol. 40, Jul 2018, pp. 2234-2239 (2018).

simultaneously met, the subject will likely experience some degree of NMI, in which some of his/her muscles will contract and the subject loses at least some volitional muscle control of the affected muscles. The effectiveness of an energy weapon to cause NMI is not always either 100% or 0%. Depending upon the factors described above, among other factors, the effective NMI caused by an energy weapon deployment can vary.

2. Analysis of the X26P Energy Weapon X1300834F (Tripp):

The enclosed Event Log, *DEFT 0058-0067 Anthony Tripp BB84028 Taser Download.pdf*, indicates that prior to the reported incident on April 24, 2019, the last time synchronization was conducted was on the date of manufacture, September 30, 2018 (Seq 35). Because the clock was running without synchronization for over 6 months, the potential clock drift on April 24, 2019, would be expected to be up to ± 12 minutes.

The best way to acquire the most accurate clock drift is to download the energy weapon and synchronize the clock as soon as possible after an incident. In this instance, the energy weapon clock was synchronized 34 days after the incident, May 28, 2019 (Seq 261). At that time, the clock was recorded to be running 3 minutes and 37 seconds fast (ahead).

The Event Log indicates the clock in the X26P energy weapon X1300834F experienced an average drift of 0.90 seconds per day ($00:03:37 / 240 \text{ days} = 0.90 \text{ seconds per day}$). Because the X26P energy weapon clock was synchronized 34 days after the incident in question, based on the average drift, the clock would have drifted 31 second ($0.90 \text{ seconds times } 34 \text{ days} = 30.6 \text{ seconds, rounded up to } 31$) during that time. Therefore, the clock drift on April 24, 2019, was 3 minutes and 6 seconds fast. The most accurate time of the events on April 24, 2019, can be calculated by subtracting 00:03:06 from the recorded times.

2.1. X1300834F Event Log Analysis:

The Event Log indicates that the X26P energy weapon was trigger activated 4 times on April 24, 2019, between 05:03 and 05:05 EDT (not including clock drift). The Event Log recorded the following events, including the clock drift corrected times:

Table 2.1- X1300834F Event Log Event + Clock Drift Correction

Seq	Recorded Time (EDT)	Corrected Time (EDT)	Event	Duration (seconds)
249	24 Apr 2019 5:03:40	24 Apr 2019 5:00:34	Armed	NA
250	24 Apr 2019 5:04:16	24 Apr 2019 5:01:10	Trigger	5
251	24 Apr 2019 5:04:22	24 Apr 2019 5:01:16	Trigger	5
252	24 Apr 2019 5:04:35	24 Apr 2019 5:01:29	Trigger	5
253	24 Apr 2019 5:04:46	24 Apr 2019 5:01:40	Trigger	5
254	24 Apr 2019 5:05:23	24 Apr 2019 5:02:17	Safe	103

The Event Log indicates that on April 24, 2019, the X26P energy weapon X1300834F was running firmware version 04.037.

2.2. X1300834F Pulse Log and Incident Analysis:

The times displayed in the Pulse Graphs in this report are referenced to EDT. Based on the above Event Log entries and Pulse Graph information, details of each energy weapon activation on April 24, 2019, and the associated Pulse Graph, are below (the times listed do not include clock drift compensation):

Activation Sequence #250

The X26P energy weapon X1300834F was armed on April 24, 2019, at 05:03:40 EDT by the safety switch as indicated on Sequence 249. Thirty-six (36) seconds later, the X26P energy weapon was activated via the trigger switch at 05:04:16 EDT as indicated on Sequence 250. The graph for Sequence 250, shown below in Figure 2.1, indicates the energy weapon was active for 5 seconds. The X26P energy weapon discharged into a high impedance load (possible skin/fat) for 1.5 seconds, and then discharged into a very low impedance (possible conductive flesh) for the next 3 seconds but the load impedance gradually increased. The last 0.5 seconds were again a very high impedance load. This is consistent with probes contacting high resistance flesh initially and then, possibly due to movement, making a better connection (lower resistance), which then gradually became a high impedance connection again due to a probe dislodging. The load impedance varying over the cycle is consistent with a lot of movement of the probe(s).

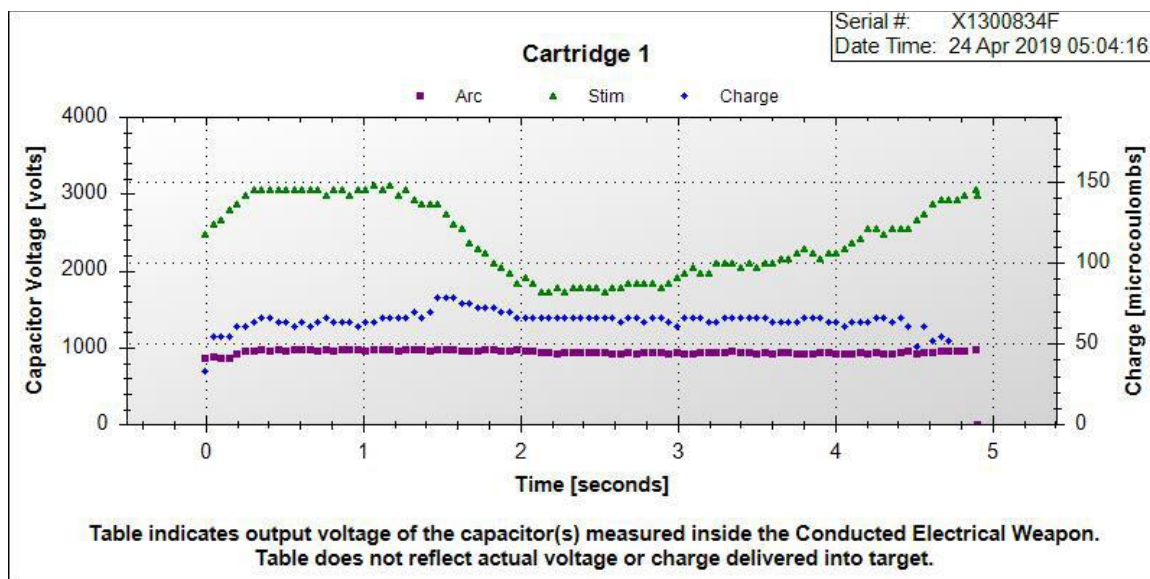


Figure 2.1 – Activation Sequence 250

The video footage from Deputy Tripp's BWC shows that Mr. McBrayer was in very close

proximity to Deputy Tripp, as shown in Figure 2.2 below, and therefore the cartridge probes were not able to spread much when deployed. The autopsy photos of the probe wounds show them only 4.5 inches apart in an area that does not have sufficient muscle mass to allow effective NMI. This is the reason Mr. McBrayer did not appear to be affected by the deployment.



Figure 2.2 – Screenshot of Tripp's BWC footage at Sequence 250 trigger pull

Activation Sequence #251

One (1) second after Sequence 250 ended, the X26P energy weapon was activated via the trigger switch again at 05:04:22 EDT as indicated on Line 251. The graph for Sequence 251, shown below in Figure 2.3, indicates the energy weapon was active for 5 seconds. The X26P energy weapon X1300834F discharged into a very high impedance load for 5 seconds. The charge varied between approximately 40 to 60 μC , indicating the X26P had an arcing connection, consistent with arcing a long distance (i.e., arcing across the cartridge plastic, wire to wire, or wire to probe).

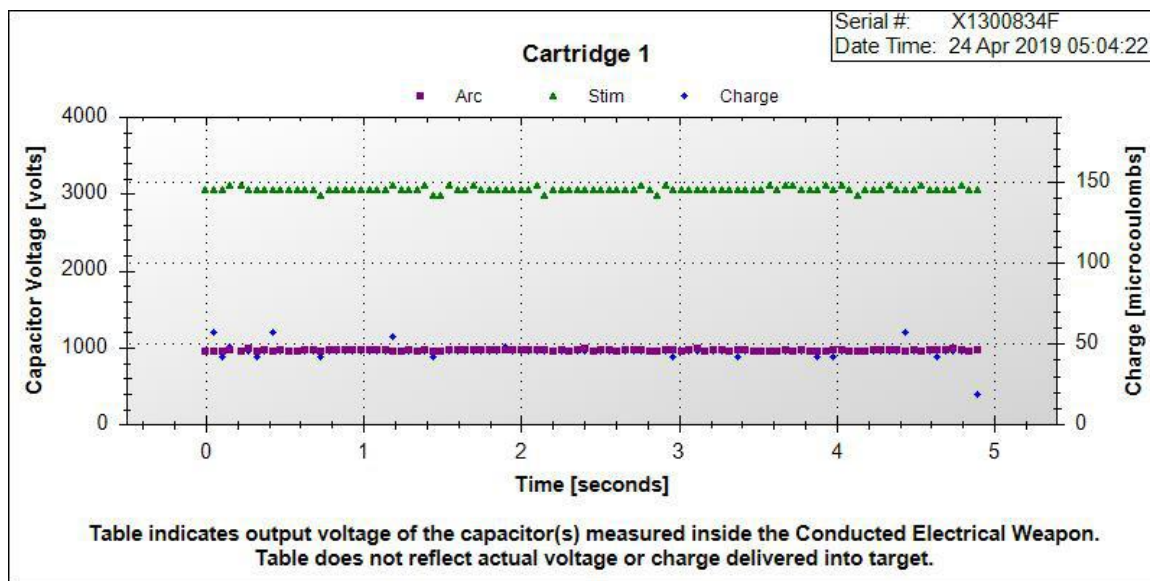


Figure 2.3 – Activation Sequence 251

The video footage from Deputy Tripp's BWC shows that the X26P energy weapon did not have an electrical connection with Mr. McBrayer and was arcing in front of the cartridge wires during Sequence 251, as shown in Figure 2.4 below. Therefore, the activation had no potential to create NMI.



Figure 2.4 – Screenshot of Tripp's BWC footage showing arcing during Sequence 251

Activation Sequence #252

Eight (8) seconds after Sequence 251 ended, the X26P energy weapon was activated via the trigger switch again at 05:04:35 EDT as indicated on Line 252. The graph for Sequence 252, shown below in Figure 2.5, indicates the energy weapon was active for 5 seconds. The graph indicates the X26P energy weapon X1300834F discharged into a very high impedance load for 5 seconds. The charge varied between approximately 40 to 60 μC , indicating the X26P had an arcing connection, consistent with arcing a long distance (i.e., arcing across the cartridge plastic, wire to wire, or wire to probe).

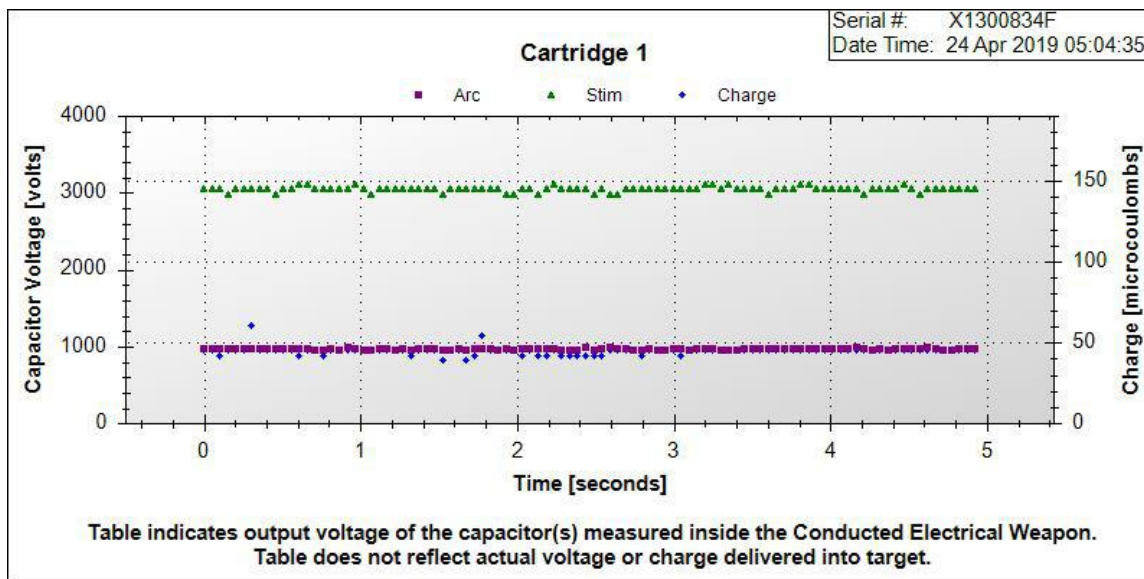


Figure 2.5 – Activation Sequence 252

The video footage from Deputy Tripp's BWC shows that the X26P energy weapon did not have an electrical connection with Mr. McBrayer and was arcing in front of the cartridge wires during Sequence 252, as shown in Figure 2.6 below. Therefore, the activation had no potential to create NMI.



Figure 2.6 – Screenshot of Tripp’s BWC footage showing arcing during Sequence 252

Activation Sequence #253

Six (6) seconds after Sequence 252 ended, the X26P energy weapon was activated via the trigger switch again at 05:04:46 EDT as indicated on Line 253. The graph for Sequence 253, shown below in Figure 2.7, indicates the energy weapon was active for 5 seconds. The graph indicates the X26P energy weapon X1300834F discharged into a very high impedance load for 5 seconds. The charge varied between approximately 40 to 65 μC , indicating the X26P had an arcing connection, consistent with arcing a long distance (i.e- arcing across the cartridge plastic, wire to wire, or wire to probe).

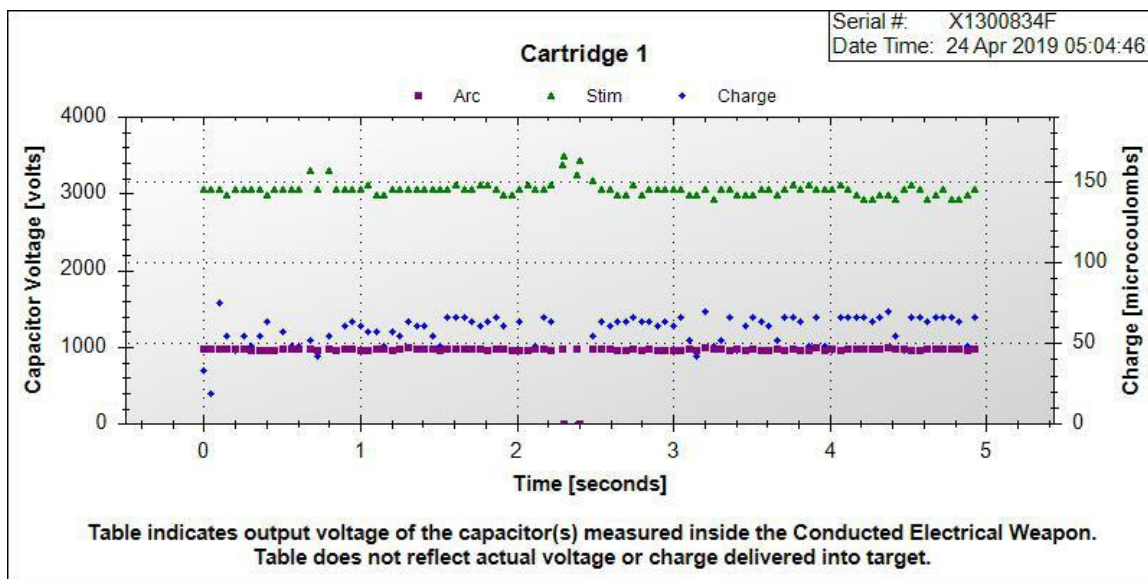


Figure 2.7 – Activation Sequence 253

The video footage from Deputy Tripp's BWC shows that the X26P energy weapon did not have an electrical connection with Mr. McBrayer and was arcing in front of the cartridge wires during Sequence 253, as shown in Figure 2.8 below. Therefore, the activation had no potential to create NMI.



Figure 2.8 – Screenshot of Tripp's BWC footage showing arcing during Sequence 253

In total across the 4 trigger activations, the X26P energy weapon X1300834F was active for 20 seconds. The 20 seconds of activation had the following cumulative connection (or lack of) status:

- Arcing in open air: 15 seconds
- Medium-low impedance consistent with flesh: 3 seconds
- Very high impedance consistent with skin and fat: 2 seconds

3. Log Analysis for the X26P Energy Weapon - X130082XN (Spurgeon):

The enclosed Event Log, *Plaintiff's Exhibit 6 (C. Spurgeon).pdf*, indicates that prior to the reported incident on April 24, 2019, the last time synchronization was conducted was on the date of manufacture, September 30, 2018 (Sequence 33). Because the clock was running without synchronization for over 6 months, the potential clock drift on April 24, 2019, would be expected to be up to ± 12 minutes.

The best way to acquire the most accurate clock drift is to download the energy weapon and synchronize the clock as soon as possible after an incident. In this instance, the energy weapon clock was synchronized 34 days after the incident, May 28, 2019 (Sequence 367). At that time, the clock was recorded to be running 4 minutes and 33 seconds fast (ahead).

The Event Log indicates the clock in the X26P energy weapon X130082XN experienced an average drift of 1.14 seconds per day ($00:04:33 / 240 \text{ days} = 1.14 \text{ seconds per day}$). Because the X26P energy weapon clock was synchronized 34 days after the incident in question, based on the average drift, the clock would have drifted 39 second ($1.14 \text{ seconds times } 34 \text{ days} = 38.76 \text{ seconds, rounded up to } 39$) during that time. Therefore, the clock drift on April 24, 2019, was 3 minutes and 54 seconds fast. The most accurate time of the events on April 24, 2019, can be calculated by subtracting 00:03:54 from the recorded times.

3.1. X130082XN Event Log Analysis:

The Event Log indicates that the X26P energy weapon was trigger activated 2 times on April 24, 2019, at 05:06 EDT (not including clock drift). The Event Log recorded the following events, including the clock drift corrected times:

Table 3.1- X130082XN Event Log Event + Clock Drift Correction

Seq	Recorded Time (EDT)	Corrected Time (EDT)	Event	Duration (seconds)
357	24 Apr 2019 5:06:26	24 Apr 2019 5:02:32	Armed	NA
358	24 Apr 2019 5:06:27	24 Apr 2019 5:02:33	Trigger	5
359	24 Apr 2019 5:06:35	24 Apr 2019 5:02:41	Trigger	5
360	24 Apr 2019 5:16:13	24 Apr 2019 5:12:19	Safe	587

The Event Log indicates that on April 24, 2019, the X26P energy weapon X130082XN was running firmware version 04.037.

3.2. X130082XN Pulse Log and Incident Analysis:

The times displayed in the Pulse Graphs in this report are referenced to EDT. Based on the above Event Log entries and Pulse Graph information, details of each energy weapon activation on April 24, 2019, and the associated Pulse Graph, are below (the times listed do not include clock drift compensation):

Activation Sequence #358

The X26P energy weapon X130082XN was armed with no cartridge installed, as shown in Figure 3.1 below, on April 24, 2019, at 05:06:26 EDT by the safety switch as indicated on Sequence 357. One (1) second later, the X26P energy weapon was activated via the trigger switch at 05:06:27 EDT, as indicated on Sequence 358. The graph for Sequence 358, shown below in Figure 3.2, indicates the energy weapon was active for 5 seconds. The graph indicates the X26P energy weapon had a partial connection and alternated between discharging into a very high impedance load (i.e., skin and fat) and into a very low impedance consistent with arcing in open air. This is consistent with a drive stun application with brief breaks in the connection, likely due to movement. The pulses at 0.4 to 0.6 second, 0.8 to 1 second, and 4.4 to 4.8 seconds are consistent with the X26P suddenly arcing in open air after discharging into a very high impedance and the capacitors are charged to their maximum (due to charge metering). Drive-stun applications do not create potential for NMI and only create the potential for a sensation of pain, depending on whether the subject was receptive to pain.



Figure 3.1– Screenshot of Spurgeon's BWC footage showing no cartridge when armed

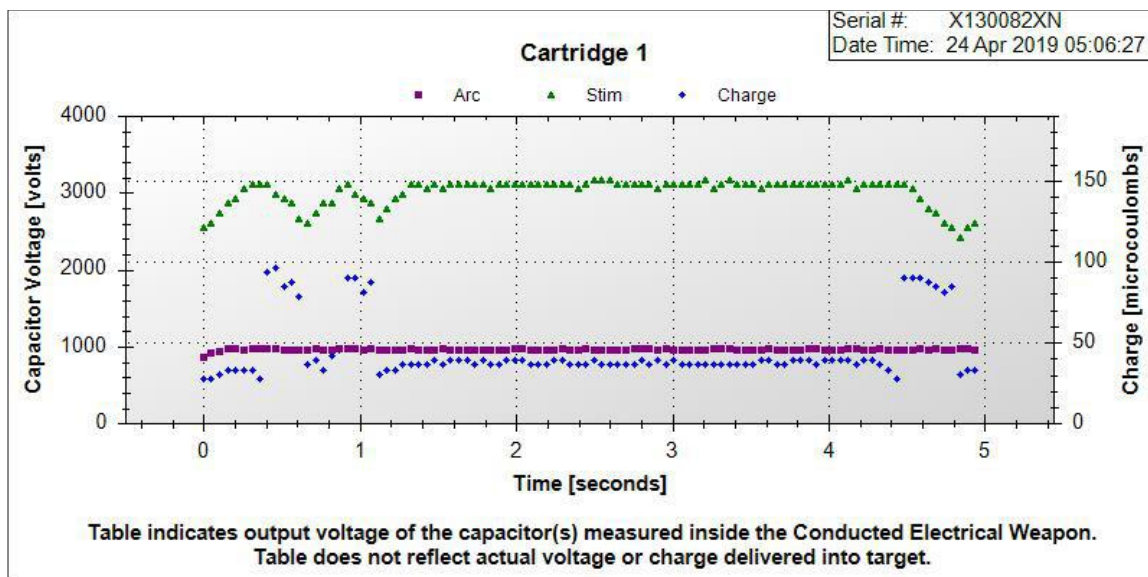


Figure 3.2 – Activation Sequence 358

Activation Sequence #359

Three (3) seconds after Sequence 358 ended, the X26P energy weapon was activated via the trigger switch at 05:06:35 EDT, as indicated on Sequence 359. The graph for Sequence 359, shown below in Figure 3.3, indicates the energy weapon was active for 5 seconds. The graph indicates the X26P discharged into a very high impedance load, consistent with a drive-stun application for 1 second, and then discharged into a very low impedance (open air) for the last 4 seconds. A single pulse at 3.8 seconds discharged into a high impedance again. Drive-stun applications do not create potential for NMI and only create the potential for a sensation of pain (for 1 second plus 1 single pulse), depending on whether the subject was receptive to pain.

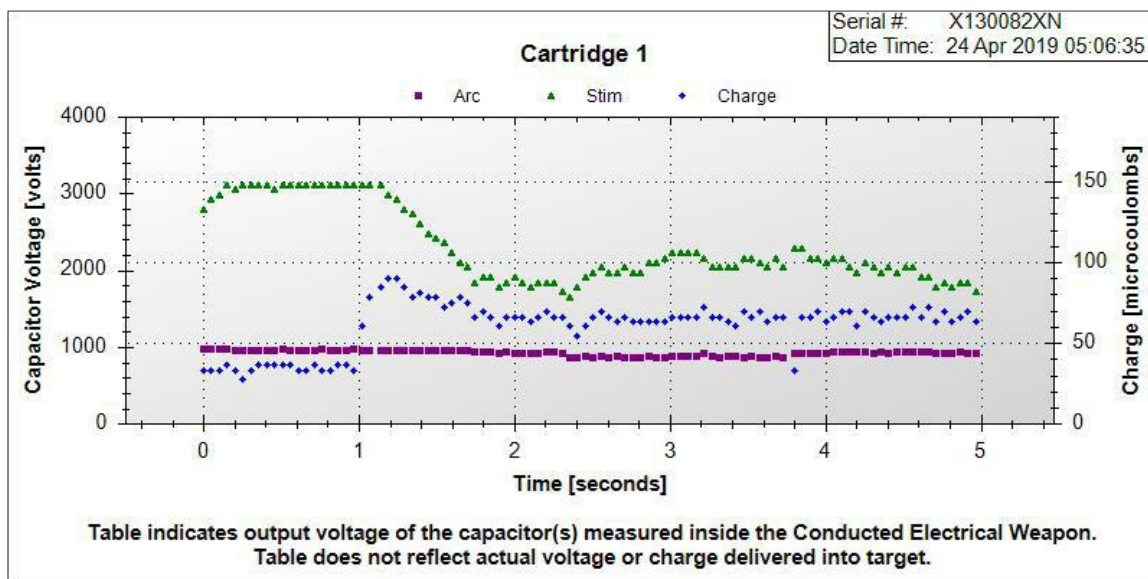


Figure 3.3 – Activation Sequence 2983

In total across the 2 trigger activations, the X26P energy weapon was active for 10 seconds. The 10 seconds of activation had the following cumulative connection (or lack of) status:

- Arcing in open air: 4.8 seconds
- Very high impedance consistent with skin and high fat: 5.2 seconds

4. Conclusion and opinions:

I completed an analysis of the logs, pulse graphs, and associated documents, photos, and videos for the deployment of the X26P energy weapons X1300834F and X130082XN on April 24, 2019. Based on my training, experience and education, and consideration of the evidence presented, research, investigations, related testing and findings, I have the following opinions, all to a reasonable, or higher, degree of professional and scientific certainty and/or probability:

The X26P energy weapon X1300834F (Deputy Tripp's X26P):

- The X26P energy weapon X1300834F experienced clock drift of 3 minutes and 6 seconds fast (ahead) on April 24, 2019. The most accurate time of the events can be calculated by subtracting 00:03:06 from the event times recorded on April 24, 2019.
- The X26P energy weapon X1300834F was trigger activated 4 times on April 24, 2019, between 05:01 and 05:02 EDT (clock drift compensated) for a total of 20 seconds.
- The pulse graphs indicate the X26P energy weapon X1300834F discharged into the following load connection types during the incident:
 - Arcing in open air: 15 seconds

- Medium-low impedance consistent with flesh: 3 seconds
 - Very high impedance consistent with skin and fat: 2 seconds
- Although there was a brief electrical connection to Mr. McBrayer in the first activation (Sequence 250), NMI is not expected to have been achieved due to the lack of probe spread and lack of sufficient muscle between the probes.
- Activation Sequences 251, 252, and 253 had no potential to create NMI on Mr. McBrayer.

The X26P energy weapon X130082XN (Deputy Spurgeon's X26P):

- The X26P energy weapon X130082XN experienced clock drift of 3 minutes and 54 seconds fast (ahead) on April 24, 2019. The most accurate time of the events can be calculated by subtracting 00:03:54 from the event times recorded on April 24, 2019.
- The X26P energy weapon X130082XN was trigger activated 2 times on April 24, 2019, at 05:02 EDT (clock drift compensated times) for a total of 10 seconds.
- The pulse graphs indicate the X26P energy weapon X130082XN discharged into the following load connection types during the incident:
 - Arcing in open air: 4.8 seconds
 - Very high impedance consistent with skin and high fat: 5.2 seconds
- Activation Sequences 358 and 359 were activated with no cartridge installed and applied in drive-stun mode. Therefore, there was no potential to create NMI.
- Activation Sequences 358 and 359 only had the potential for pain compliance for 5.2 of the 10 seconds it was activated, depending on whether Mr. McBrayer was receptive to pain.

5. General Comments:

Report Focus – This report is focused solely on the incident captioned and related concerns and/or issues.

This Case Specific Limitation – Any actions, statements, writings, this report, information, any testimony, etc. are specifically limited to this case.

Expert Capacity – This report and any subsequent reports, testimony, opinions, etc. are within my capacity as a Sr. Investigations Engineer for Axon Enterprise, Inc. (Axon), a Delaware corporation, with its principal place of business in Scottsdale, Arizona.

Right to Amend – The opinions in this report are living opinions. That is, should additional discovery material be received, and/or additional research be completed, and then reviewed, these opinions may be altered and/or reinforced depending upon what information is obtained, reviewed, considered, and/or studied.

Further Development – The opinions expressed in this report are not necessarily final in nature. Rather, they are listed to comply with current report requests. Each opinion may be

further developed through research, investigation, during deposition, and/or trial testimony.

Specific References – Some of the opinions in this report may list specific references to some of the documents reviewed and/or considered or specific references. These listings are not intended to be all inclusive. I specifically reserve the right to supplement the support for each of the opinions in this report.

Newly Identified Issues – If new issues are opined, identified, and/or developed subsequent to submission of this report, I reserve the right to supplement this report.

Degree of Certainty – All opinions stated in this report are in direct regard to the case captioned, and the underlying incident or events leading to this case, and are expressed to a reasonable, or higher, degree of professional certainty and/or probability.

Credibility Determinations – Credibility determinations are solely and exclusively within the province of the trier of fact.

This report is based on information that is known to me at the present time. I may therefore be apprised of additional information which may cause revision or supplementation of this report, and I expressly reserve the right to do so. In addition, I reserve the right to revise and supplement this report based upon information that may hereafter be provided to me, or which becomes available to me through continued investigation research or study.

I reserve the right to revise and supplement this report in order to clarify, add, or complete questions or statements at deposition, or at the request of counsel for clarification, organization or completeness of any matters pertaining to this investigation or report.

The opinions provided in this case were developed based upon my education, training, experience, and specialized knowledge.

6. Prior Expert Testimony

I have testified as an expert at trial or by deposition within the last four years in the following cases:

Travis Hermiz vs. City of Royal Oak Police Chief, Budzynowski, Wern, et al, United States District Court, Eastern District of Michigan, Southern Division, Case No. 16-11214

- Trial Testimony on September 26, 2017 in Detroit, MI

Shainie Lindsey, et al. vs. City of Pasadena, et al, United States District Court, Central District of California, Case No. 16-CV-8602-SJO(RAOx)

- Deposition Testimony via telephone on November 29 & 30, 2017 in Scottsdale, AZ

Allan F. White, et al. vs. Bradley County, et al, United States District Court, Eastern District of Tennessee, Case No. 1:16-CV-322

- Deposition Testimony via telephone on December 5, 2017 in Scottsdale, AZ

April Damiani, vs. Michael Allen, et al, United States District Court, Southern District of Indiana, New Albany Division, Case No. 4:16-cv-53-RLY-TAB

- Deposition Testimony via telephone on February 5, 2018 in Scottsdale, AZ

Hererra vs. The State of Arizona, et al, United States District Court, District of Arizona, Case No. CV14-2278

- Trial Testimony on September 18, 2018 in Tucson, AZ

Kitchen vs. Tegtmeier, et al, United States District Court, Northern District of Illinois, Eastern Division, Case No. 1:15-cv-06781

- Trial Testimony on October 17, 2018 in Chicago, IL

Inquest in the Death of Josh Pitt, In the Bedfordshire & Luton Coroner's Service, Luton, United Kingdom

- Inquest Expert Testimony on January 10, 2019 in Luton, England, UK

Aguilar vs. LAPD, United States District Court, Central District of California, Case No. 2:17-cv-04382

- Trial Testimony on May 1, 2019 in Los Angeles, CA

Grand Jury Investigation, Circuit Court of the Second Judicial Circuit in and for Franklin County Florida, Case No. 2019-002726

- Grand Jury Testimony on July 11, 2019 in Apalachicola, FL

Commonwealth of VA vs. Douglas Johnson, Circuit Court of the State of Virginia, in the Circuit Court of the Twentieth Judicial Circuit, Case No. CR00032244

- Trial Testimony on August 22, 2019 in Leesburg, VA

The State of Florida vs. Nikolas Cruz, Circuit Court of the 17th Judicial Circuit, in and for Broward County, Florida, Case No. 18014129CF10A

- Deposition Testimony on October 4, 2019 in Scottsdale, AZ (via Zoom video stream/telephone)

Rakeyia Scott vs. The City of Charlotte, In the General Court of Justice, State of North Carolina, County of Mecklenburg, Superior Court Division, Case No. 18-cvs-16700

- Deposition Testimony on November 8, 2019 in Scottsdale, AZ

The State of Oklahoma vs. Byron James Shepard, In the District Court of the Twenty-Third Judicial District of the State of Oklahoma Sitting in and for Pottawatomie County, Case No. CF-2017-176

- Trial Testimony on November 21, 2019 in Shawnee, OK

Frazier vs. Erik Miller, Montana Third Judicial District Court, Powell County, Case No. DV-17-97

- Trial Testimony on December 5, 2019 in Deer Lodge, MT

Sneed vs. Michael, et al, In the Circuit Court of Jackson County, State of Missouri, Case No. 1816-CV-25106

- Deposition Testimony on January 15, 2020 in Phoenix, AZ

April Damiani, vs. Michael Allen, et al, United States District Court, Southern District of Indiana, New Albany Division, Case No. 4:16-cv-53-RLY-TAB

- Trial Testimony on January 24, 2020 in Evansville, IN

Whobrey vs. City of Danville, United States District Court, Central District of Illinois, Urbana Division, Case No. 19-cv-2074

- Deposition Testimony on May 5, 2020 in Scottsdale, AZ (via online video stream)

Henderson vs. City of Torrance, United States District Court, Central District of California, Case No. 2:18-cv-03918-MWF-Ex

- Deposition Testimony on June 8, 2020 in Fountain Hills, AZ (via online video stream)

Grand Jury Hearing, Circuit Court of the Second Judicial Circuit in and for Leon County Florida, Case No 2020-00043446.

- Grand Jury Testimony on September 3, 2020 in Tallahassee, FL (via video stream from Scottsdale AZ)

Grand Jury Hearing, Office of the District Attorney, Westchester County, NY, Case No HB20-074.

- Grand Jury Testimony on October 28, 2020 in Westchester, NY (via video stream from Scottsdale AZ)

Adkins vs. Roberts, United States District Court, Northern District of Florida, Panama City Division, Case No. 5:18-cv-271-MCR/MJF.

- Deposition Testimony on December 1, 2020 in Tallahassee, FL (via video stream from Scottsdale AZ)

R. vs. Lindsay, Court of Queen's Bench of Alberta, Case No. 170015663Q1.

- Hearing Testimony on July 5, 2021 in Calgary, Alberta, Canada (via video stream from Scottsdale AZ)

Grand Jury Hearing, State of Texas vs. Juan Ramos, 337th Judicial District Court of Harris County, Texas.

- Hearing Testimony on July 12, 2021 in Houston Texas (via video stream from Scottsdale AZ)

Edward O'Brien vs. Stephen Murphy, et al, United States District Court, Eastern District of Missouri, Southeastern Division, Case No 1:20-CV-00153-SEP.

- Deposition Testimony on October 22, 2021 in St. Louis, MO (via video stream from Scottsdale, AZ).

The State of Oklahoma vs. Joshua Taylor, et al, District Court of Carter County, State of Oklahoma, Case No CF-2020-221 and CF-2020-222.

- Trial Testimony on November 4, 2021 in Ardmore, OK

Ryan A. O'Neal vs. City of Phoenix, et al, United States District Court for the District of Arizona, Case No CV-20-01732-PHX-SPL.

- Deposition Testimony on February 23, 2022 in Phoenix, AZ

Kimberly Beck, et al, vs. The United States of America, et al, United States District Court for the District of New Mexico, Case No 20-cv-1280-MV-SMV.

- Deposition Testimony on March 21, 2022 via video stream from Scottsdale, AZ

Curriculum Vitae

Bryan D. Chiles
17800 N. 85th Street
Scottsdale, AZ 85255
bchiles@axon.com

SUMMARY

Over 15 years of Research & Development, Validation testing, Compliance Engineering, and forensic testing and analysis for Axon Enterprise, Inc (formerly TASER International, Inc.). Over 20 years in the electrical, mechanical, and environmental testing. Over 24 years in the electronics and test equipment industry.

EXPERIENCE

2005-Present **Axon Enterprise, Inc.**
Scottsdale, AZ

2019 – Present	Sr. Investigations Engineer
2014 – 2019	Product Compliance Manager
2013 – 2014	Technical Forensics Specialist
2011 – 2014	Validation Test Manager
2006 – 2011	Validation Test Supervisor
2005 – 2006	Research & Development Technician

Sr. Investigations Engineer

As the Sr. Investigations Engineer, I report to the Director of Product Litigation & TASER Legal and have the responsibility to: manage and conduct investigations for Axon customers, attorneys, or civilians. I design and conduct investigative tests and processes, including research and scenario-based tests, determining the highest forensic value of data and physical evidence relating to TASER energy weapons and Axon body worn cameras (BWCs). Using test equipment and software tools, I determine all possible means to download and test devices and evidence submitted to Axon by customers and/or their representing attorneys for formal investigation, interpret downloaded data, and submit the results to the requesting party in a formal report format, or via phone, email, or in person. I also author expert reports for customers and/or their representing attorneys and, upon request, appear in a court of law as an expert witness for federal, state, local, and foreign courts. My areas of expertise are energy weapon operation and data recording, energy weapon data downloading and interpretation, energy weapon data evidence recovery, Axon video and sensor product operation and recording, Axon body worn camera (BWC) downloading/uploading, log analysis, and video recovery.

I have appeared in United States Federal and State Courts, and international court, and have been accepted as an expert witness pertaining to the technical aspects of the TASER M26C, TASER M26, TASER X26E, X2, and X26P energy weapons, TASER CAM recorder, TASER CAM-HD recorder, Axon Body 1, Axon Flex 1, and Axon Body 2 BWC operation and recordings to device memory.

I have written over 400 analysis reports regarding the data analysis of Axon energy weapons, cameras, and software.

I continue to be responsible for authoring and maintaining TASER brand product test standards and managing third party laboratory certifications to those standards. I am a current member of the USNC (United States National Committee) experts, participating in a workgroup (TS85 WG22) reviewing and revising IEC 62792, an international standard on energy weapon output measurement.

Product Compliance Manager

As the Product Compliance Manager, I reported to the Vice President and Associate General Counsel and had the responsibility to: ensure that TASER brand and Axon products complied with U.S. and international standards and regulations regarding radio frequencies, Bluetooth, Wi-Fi, LTE, and other wireless standards and regulations, product safety and various other product related standards; and coordinated approval for use of Axon's products in foreign countries. I was also responsible for third party laboratory certifications to TASER brand product test standards. I also continued to retain the duties of the Technical Forensic Specialist. I was also a volunteer member of the Axon Emergency Response Team and Critical Event Response Team.

Technical Compliance Manager

As the Technical Compliance Manager, I reported to the Quality Manager and had the responsibility to: ensure that TASER brand and Axon products comply with U.S. and international standards and regulations regarding radio frequencies, Bluetooth, Wi-fi, and other wireless standards and regulations; and coordinate approval for use of Axon's wireless products in foreign countries. I was also responsible for third party laboratory certifications to TASER brand product test standards. I continued to retain the duties of the Technical Forensic Specialist and Validation Test Manager.

Technical Forensics Specialist

As the Technical Forensics Specialist, I reported to the Vice President and Associate General Counsel. I analyzed technical investigative evidence for Axon's Technical Services Department. Using test equipment and software tools, I determined all possible means to download devices submitted to Axon by customers and/or their representing attorneys for formal

investigation, interpret downloaded data, and submit the results to the requesting party in a formal report format, or via phone, email, or in person. I also write expert reports for customers and/or their representing attorneys and, upon request, appear in a court of law as an expert witness for federal, state, and local authorities. My areas of expertise are energy weapon operation and data recording, energy weapon data downloading and interpretation, energy weapon data evidence recovery, Axon video product operation and recording, Axon body worn camera (BWC) downloading/uploading, and video recovery.

Validation Test Supervisor / Manager

As the Validation Test Manager, I reported to the Quality Manager. I was responsible for the Validation Test Team's performance and activities. I was responsible for the electrical, firmware, software, mechanical, environmental, and compliance testing of Axon's products. I was a member of all core development teams and the leader in test development for existing products. Under my supervision and management, the following Axon products had been tested and released to production;

- TASER® X26E™ Firmware V18, 19, 20, 21, 22, and 24
- TASER X26 Dataport™ Software v16, v17, v17.9, and v17.9.4
- TASER CAM™ recorder
- TASER CAM Download software v2.0 and v2.4
- TASER C2™ energy weapon and firmware
- TASER C2 Cartridge
- TASER XREP™ energy weapon and firmware release
- TASER Shockwave™
- TASER X3™ energy weapon and all firmware releases
- Axon™ PRO recorder and all firmware releases
- EVIDENCE Sync™ Software v1.28, v1.29, v1.30, v1.31, v2.08.5, v2.08.13, v2.09, v2.9.2, and v3.12.41
- TASER Smart™ Cartridge
- TASER Protector™ safe driver system
- TASER X2™ energy weapon and all firmware releases
- TASER CAM HD recorder and all firmware releases
- Axon Flex™ recorder and all firmware releases
- Axon ETM™ (Evidence Transfer Manager) and all firmware releases.
- TASER CAM (Gen 2) and all firmware releases
- TASER X26P™ energy weapon and all firmware releases
- Axon Body™ recorder and firmware release
- Axon Mobile apps for iOS and Android mobile devices
- Axon EVIDENCE Mobile apps for iOS and Android mobile devices

I developed and wrote the *TASER Certified Specification Test Procedures* for the X26E, M26, X2, and X26P energy weapons. I had trained and/or certified

government personnel in testing the X26E energy weapons to published specification using the *TASER Certified Specification Test Procedure*. I developed and wrote test plans and specifications for each product validation test sequence and ensured the tests were carried out thoroughly. I was also responsible to ensure products were in compliance with USA, Canada, and European Union rules and regulations regarding Electro-Magnetic Compliance (EMC) to United States, Canada, and European standards & directives (FCC, ISED, and CE). I was also responsible for performing product analysis and downloads for Axon's customers in relation to various legal investigations and writing reports with investigation findings. I was also responsible for writing expert reports for customer cases that may be involved in litigation. I was also a volunteer member of the Axon Emergency Response Team.

Research & Development Technician

As a Research & Development Technician, I was responsible for assisting engineers with prototype development, software/firmware test, test fixture design and development, setting up and monitoring research tests, reporting test results, and troubleshooting.

2001 – 2005 MGE UPS Systems Costa Mesa, CA

2001 – 2003 R&D Test Technician
2003 – 2005 Test Engineer 1

As an R&D Test technician and as a Test Engineer 1, I was responsible for the qualification and validation of new products and changes/modifications to legacy products. I was responsible for the electrical, firmware, software, and mechanical testing for all new products, from the Research & Development prototypes to the industrial model. Products that I tested included 120 volt (V) single phase UPS systems, 208 V 3 phase UPS systems, and 480 V 3 phase UPS systems up to 800 kVA output, and up to 600 ampere Static Transfer Switch systems. I also assisted in compliance testing for Underwriters Laboratories® and compliance testing for United States and Canada EMC rules and regulations (FCC and ISED).

1997 – 2001 US Calibration (formerly Educational Services) Irvine, CA

1997 – 2001 Calibration and Repair Technician

As a Calibration and Repair Technician, I was responsible for calibrating electrical and mechanical test equipment to ANSI standards with traceability to the National Institute of Standards and Technology (NIST). I was also

responsible for electronic equipment repair. I was the team leader of a major contract with a large automotive battery manufacturer, AC DELCO, in repairing and calibrating battery charging systems.

EDUCATION

DeVRY University, Pomona, CA

- A.S. in Electronics, 1998 (With Honors graduate)

Irvine Valley College, Irvine, CA

- General credits 1999 - 2000

Saddleback College, Mission Viejo, CA

- General credits 2000 - 2002

TRAINING

Axon Enterprise, Inc.

- Certified TASER Instructor- TASER 2005
- Statistics and Analysis- Arizona State University 2010
- Six Sigma LEAN Training- Arizona State University 2010
- Leadership Training – TASER 2012
- “7 Habits” Management Training- Franklin Covey 2015
- Evidence Handling & Chain of Custody- TASER 2015
- Bio-electricity by *Dr. Mark Kroll, Dr. Dorin Panescue, Dr. Jim Sweeney*, TASER 2016
- Gallup Strengths Builders Training- Axon 2018
- Transport of Dangerous Goods, DOT, IATA, IMDG – Axon 2019
- Level 4 CJIS Security Training, CJIS 2019
- Transport of Dangerous Goods, DOT, IATA, IMDG – Axon 2021
- Level 4 CJIS Security Training, CJIS 2021

National Instruments

- LabView Programming 2006

Fred Pryor, Inc.

- Advanced Microsoft Excel 2002

SPEAKING ENGAGEMENTS

- “Energy Weapon Forensics”- Presenter at the A.F.T.E. Annual Training Conference, May 2017
- “Testifying” – Co-presenter at the Axon Accelerate Certification Conference, June 2017
- “Testifying on Video Admission” – Co-presenter at the Axon Certification Conference,

December 2017

- “Testifying on Energy Weapon Logs & Video” – Co-presenter at TASER Master Instructor School, Sanford FL, March 2018
- “Pulse Graphs Analysis” – Co-presenter at TASER Master Instructor School, Sanford FL, March 2018
- “Testifying on Energy Weapon Logs & Video” – Co-presenter at TASER Master Instructor School, Toronto ON, May 2018
- “Deep Dive on Energy Weapon Pulse Graphs” – Presenter at Axon Accelerate Conference, June 2018
- “Drop ‘em, Soak ‘em, How We Test Our Energy Weapons” – Presenter at Axon Accelerate Conference, June 2018
- “Understanding Your Energy Weapon Data” – Co-Presenter at Axon Accelerate Conference, June 2018
- “Testifying on Video Admission” – Co-presenter at the Axon Certification Conference, June 2018
- *Electrical Weapon Charge Delivery with Arcing* – Presenter of Poster Presentation at IEEE EMBC 2018, Honolulu HI, July 2018
- “Testifying on Energy Weapon Logs & Video” – Co-presenter at TASER Master Instructor School, Mesa AZ, November 2018

MEMBERSHIPS

- *Member, Institute of Electrical & Electronic Engineers (IEEE)*
- *Member, IEC TC85 WG22 IPG-ESW, review committee for IEC 62792*
- *Member, USNC IEC Experts*

PUBLICATIONS

- *Electrical Weapon Charge Delivery with Arcing* - 2018 – Chiles, Nerheim, Brave, Panescue, Kroll - IEEE EMBC 2018
- *TASER CEW Wire Analysis* – 2019 – Chiles, BD – Researchgate 2019
- *Conducted Electrical Weapon Controlled-Charge Delivery* –2020 - Chiles, B., Nerheim, M., Brave, M., Panescu, D., Kroll, M.W. - *Conf Proc IEEE Eng Med Biol Soc*, vol. 42, pp. tbd, and *Conf. Of Canadian Medical and Biological Engineering Society*, August 2020.
- *Estimation of Physiological Impedance from Neuromuscular Pulse Data*. Chiles, B.D., Nerheim, M.H., Markle, R.C., Brave, M.A., Panescu, D., Kroll, M.W. *Conf Proc IEEE Eng Med Biol Soc*, vol. 43, November 2021.
- *Acoustical and Electrical Analysis of Arcing with Electronic Control Devices*. Chiles, B.D., Nerheim, M.H., Markle, R.C., Brave, M.A., Panescu, D., Kroll, M.W. *Conf Proc IEEE Eng Med Biol Soc*, vol. 43, November 2021.

- *Output of Electronic Muscle Stimulators: Physical Therapy and Police Models Compared.* Kroll, M.W., Perkins, P.E., Chiles, B.D., Pratt, H., Witt, K.K., Luceri, R.M., Brave, M.A., Panescu, D. *Conf Proc IEEE Eng Med Biol Soc*, vol. 43, November 2021.

EXPERT TESTIMONY

Refugio Nieto and Elvira Nieto v. City and County of San Francisco, United States District Court for the Northern District of California, Civil Action No. C14-03823-NC

- Deposition on September 28, 2015 in Phoenix, AZ
- Trial Testimony on March 7, 2016 in San Francisco, CA

Commonwealth of Pennsylvania v. Lisa Joellen Mearkle, Dauphin County Court of Common Pleas, Criminal Docket CP-22-CR-0002379-2015

- Trial Testimony on November 3, 2015 in Harrisburg, PA

Catrice Pierre, et al v. Lee Hardy, et al, U.S. District Court, Eastern District of Louisiana, Civil Action No. 12-1891

- Deposition via telephone on December 21, 2015 from Scottsdale, AZ, both parties counsel in Metairie, LA
- Trial Testimony on September 13, 2016 in New Orleans, LA.

International Brotherhood of Police Officers, Local 537 – Jonathan Adams v. City of Pueblo, CO., Arbitration Tribunals of the American Arbitration Association, Case No. 01-15-0005-0390

- Arbitration Testimony on March 23, 2016 in Pueblo, CO

The State of North Carolina v. Bryon Vassey., State of North Carolina, County of Brunswick, In the General Court of Justice, Superior Court Division, Case No. 14-CRS-000247

- Trial Testimony on April 28, 2016 in Bolivia, NC

The State of California v. Ignacio Canela., Superior Court of California, County of San Diego, Central Division, Case No. SCD251838

- Trial Testimony on May 23, 2016 in San Diego, CA

Robert Jackson III vs. County of San Bernardino, et al., United States District Court, Central District of California, Case No. EDCV 13-01650 JGB (DTB)

- Deposition via telephone on May 25, 2016 in Scottsdale AZ, both parties counsel in Woodland Hills, CA
- Trial Testimony on July 14, 2016 in Riverside, CA

The Commonwealth of Virginia vs. Stephen Rankin., Portsmouth Circuit Court, Case No. 15-1398

- Trial Testimony on July 29, 2016 in Portsmouth, VA

The State of South Carolina vs. Michael Slager., Charleston County Judicial Center, Case No. 09C-0303420

- Trial Testimony on November 7, 2016 in Charleston, SC

The State of Georgia vs. Marcus Eberhart and Howard Weems, Fulton County Superior Court, Criminal Division, Case No. 15SC136846

- Trial Testimony on December 9, 2016 in Atlanta, GA

Travis Hermiz vs. City of Royal Oak Police Chief, Budzynowski, Wern, et al, United States District Court, Eastern District of Michigan, Southern Division, Case No. 16-11214

- Trial Testimony on September 26, 2017 in Detroit, MI

Shainie Lindsey, et al. vs. City of Pasadena, et al, United States District Court, Central District of California, Case No. 16-CV-8602-SJO(RAOx)

- Deposition Testimony via telephone on November 29 & 30, 2017 in Scottsdale, AZ

Allan F. White, et al. vs. Bradley County, et al, United States District Court, Eastern District of Tennessee, Case No. 1:16-CV-322

- Deposition Testimony via telephone on December 5, 2017 in Scottsdale, AZ

April Damiani, vs. Michael Allen, et al, United States District Court, Southern District of Indiana, New Albany Division, Case No. 4:16-cv-53-RLY-TAB

- Deposition Testimony via telephone on February 5, 2018 in Scottsdale, AZ

Hererra vs. The State of Arizona, et al, United States District Court, District of Arizona, Case No. CV14-2278

- Trial Testimony on September 18, 2018 in Tucson, AZ

Kitchen vs. Tegtmeier, et al, United States District Court, Northern District of Illinois, Eastern Division, Case No. 1:15-cv-06781

- Trial Testimony on October 17, 2018 in Chicago, IL

Inquest in the Death of Josh Pitt, In the Bedfordshire & Luton Coroner's Service, Luton, United Kingdom

- Inquest Expert Testimony on January 10, 2019 in Luton, England, UK

Aguilar vs. LAPD, United States District Court, Central District of California, Case No. 2:17-cv-04382

- Trial Testimony on May 1, 2019 in Los Angeles, CA

Grand Jury Investigation, Circuit Court of the Second Judicial Circuit in and for Franklin County Florida, Case No. 2019-002726

- Grand Jury Testimony on July 11, 2019 in Apalachicola, FL

Commonwealth of VA vs. Douglas Johnson, Circuit Court of the State of Virginia, in the Circuit Court of the Twentieth Judicial Circuit, Case No. CR00032244

- Trial Testimony on August 22, 2019 in Leesburg, VA

The State of Florida vs. Nikolas Cruz, Circuit Court of the 17th Judicial Circuit, in and for Broward County, Florida, Case No. 18014129CF10A

- Deposition Testimony on October 4, 2019 in Scottsdale, AZ (via Zoom video stream/telephone)

Rakeyia Scott vs. The City of Charlotte, In the General Court of Justice, State of North Carolina, County of Mecklenburg, Superior Court Division, Case No. 18-cvs-16700

- Deposition Testimony on November 8, 2019 in Scottsdale, AZ

The State of Oklahoma vs. Byron James Shepard, In the District Court of the Twenty-Third Judicial District of the State of Oklahoma Sitting in and for Pottawatomie County, Case No. CF-2017-176

- Trial Testimony on November 21, 2019 in Shawnee, OK

Frazier vs. Erik Miller, Montana Third Judicial District Court, Powell County, Case No. DV-17-97

- Trial Testimony on December 5, 2019 in Deer Lodge, MT

Sneed vs. Michael, et al, In the Circuit Court of Jackson County, State of Missouri, Case No. 1816-CV-25106

- Deposition Testimony on January 15, 2020 in Phoenix, AZ

April Damiani, vs. Michael Allen, et al, United States District Court, Southern District of Indiana, New Albany Division, Case No. 4:16-cv-53-RLY-TAB

- Trial Testimony on January 24, 2020 in Evansville, IN

Whobrey vs. City of Danville, United States District Court, Central District of Illinois, Urbana Division, Case No. 19-cv-2074

- Deposition Testimony on May 5, 2020 in Scottsdale, AZ (via online video stream)

Henderson vs. City of Torrance, United States District Court, Central District of California, Case No. 2:18-cv-03918-MWF-Ex

- Deposition Testimony on June 8, 2020 in Fountain Hills, AZ (via online video stream)

Grand Jury Hearing, Circuit Court of the Second Judicial Circuit in and for Leon County Florida, Case No 2020-00043446.

- Grand Jury Testimony on September 3, 2020 in Tallahassee, FL (via video stream from Scottsdale, AZ)

Grand Jury Hearing, Office of the District Attorney, Westchester County, NY, Case No HB20-074.

- Grand Jury Testimony on October 28, 2020 in Westchester, NY (via video stream from Scottsdale, AZ)

Adkins vs. Roberts, United States District Court, Northern District of Florida, Panama City Division, Case No. 5:18-cv-271-MCR/MJF.

- Deposition Testimony on December 1, 2020 in Tallahassee, FL (via video stream from Scottsdale, AZ)

R. vs. Lindsay, Court of Queen's Bench of Alberta, Case No. 170015663Q1.

- Hearing Testimony on July 5, 2021 in Calgary, Alberta, Canada (via video stream from Scottsdale, AZ)

Grand Jury Hearing, State of Texas vs. Juan Ramos, 337th Judicial District Court of Harris County, Texas.

- Hearing Testimony on July 12, 2021 in Houston Texas (via video stream from Scottsdale, AZ)

Edward O'Brien vs. Stephen Murphy, et al, United States District Court, Eastern District of Missouri, Southeastern Division, Case No 1:20-CV-00153-SEP.

- Deposition Testimony on October 22, 2021 in St. Louis, MO (via video stream from Scottsdale, AZ)

The State of Oklahoma vs. Joshua Taylor, et al, District Court of Carter County, State of Oklahoma, Case No CF-2020-221 and CF-2020-222.

- Trial Testimony on November 4, 2021 in Ardmore, OK

Ryan A. O'Neal vs. City of Phoenix, et al, United States District Court for the District of Arizona, Case No CV-20-01732-PHX-SPL.

- Deposition Testimony on February 23, 2022 in Phoenix, AZ

Kimberly Beck, et al, vs. The United States of America, et al, United States District Court for the District of New Mexico, Case No 20-cv-1280-MV-SMV.

- Deposition Testimony on March 21, 2022 via video stream from Scottsdale, AZ